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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/791,041	03/01/2004	Nikolaj S. Bjorner	14917.0457USU1	1264

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EXAMINER

BELL, CORY C

ART UNIT	PAPER NUMBER
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2164

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/791,041

Applicant(s)

BJORNER, NIKOLAJ S.

Examiner

Cory C. Bell

Art Unit

2164

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/22/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-16,18,19 and 22-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,4-12 and 22-27 is/are allowed.
- 6) ☒ Claim(s) 13-16,18 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/22/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

SAM RIMELL

PRIMARY EXAMINER

DETAILED ACTION

1. Claims 1, 4-16, 18, 19 and 22-27 have been examined.

Allowable Subject Matter

The indicated allowability of claim 16 and 17 is withdrawn in view of the newly discovered reference(s) to teach the use of acyclic graphs and binary search trees for version vectors. Rejections based on the newly cited reference(s) follow.

Claims 1, 4-12, and 22-27 are allowed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6317754, known hereafter as Peng in view of "Communication Timestamps for File System Synchronization," known hereafter as Cox, published in 2001.

Excerpt from action date 8/24/2006:

- a. *As per Claim 1, A computer-readable medium having computer-executable instructions, comprising: transmitting an interval vector from a first member of a replica set to a second member of the replica set, (Figure 7) the interval vector comprising one or more intervals of versions, each interval having an upper bound and a lower bound* (Col

16 lines 46-52, and Col 12 lines 42-55) determining which resources are out-of-sync between the members via the interval vector;(Col 3 lines 27-31) synchronizing at least one of the out-of-sync resources;(Figure 7) updating the interval vector to indicate that the at least one of the out-of-sync resources is synchronized.(Col 6 lines 54-63)

b. *As per Claim 13, An apparatus for replicating resources, comprising: storage arranged to store the resources, each resource associated with a version; storage arranged to store an interval vector, the interval vector comprising one or more intervals of versions, each interval having an upper bound and a lower bound; a communications mechanism arranged to transmit the interval vector and to receive updates in response thereto, wherein determining whether to update a resource comprises finding that the version associated with the resource is not included in any of the intervals of the interval vector.* See Claim 1 rejection and figure 9

2. Claim 13 is rejected for the following reasons:

The original claim 13 was rejected as shown above, however Peng failed to expressly disclose the limitation of the interval vector being represented as a trie embodied as a directed acyclic graph. This feature is taught in Cox page 2. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to include this feature as it aids in conflict resolution.

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c. *As per Claim 14, The apparatus of claim 13, wherein one of the updates comprises a deletion of a resource.* (Col 5 lines 32-35).

d. *As per Claim 15, The apparatus of claim 13, wherein one of the updates comprises a modification of a resource.* Col 3 lines 15-20, any file that is updated has been modified.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 6317754, known hereafter as Peng in view of Petersen and US 6321232, known hereafter as Syeda-Mahmood.

3. Claim 16 is rejected for the following reasons:

The original claim 13 was rejected as shown above, however Peng failed to expressly disclose the limitation of the interval vector being represented as a binary search tree. This limitation is taught by Hsu and Peterson, Peterson teaches the use of advanced data structure for representing version vectors, section 6.3 and Syeda-Mahmood teaches representing hash tables as binary search trees. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to include this feature as it provides the advantage of allowing for a faster search and making the time linear.

4. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6317754, known hereafter as Peng in view of "Communication Timestamps for File System Synchronization," known hereafter as Cox, published in 2001 in view of Strehl.

5. Claim 18 is rejected for the following reasons:

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Peng and Cox teach the claims upon which claim 18 is dependant, but fail to expressly disclose the directed acyclic graph being a interval decision diagram. The use of an interval decision diagram is taught in section 2.1 a Strehl. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to use this feature due the advantages of the reduction in processing time, see figure 3.

6. Claim 19 is rejected for the following reasons:

This feature is inherent as it is a property of an Interval decision diagram.

Response to Arguments

Any rejections not repeated have been withdrawn.

Applicant's arguments are moot in view of the new grounds of rejection.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cory C. Bell whose telephone number is (571) 272 2736. The examiner can normally be reached on m-f 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Rones can be reached on (571) 272 4085. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



SAM RIMELL
PRIMARY EXAMINER